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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,782	04/01/2004	Yoshiaki Sakagami	62533.00008	4968
32294	7590	10/17/2007	EXAMINER	
SQUIRE, SANDERS & DEMPSEY L.L.P. 14TH FLOOR 8000 TOWERS CRESCENT TYSONS CORNER, VA 22182			OLSEN, LIN B	
		ART UNIT	PAPER NUMBER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/814,782	SAKAGAMI ET AL.	
	Examiner Lin B. Olsen	Art Unit 4131	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 4/20/2004.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-11 is/are rejected.
- 7) Claim(s) 11 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 20 April 2004 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>4/20/2004, 8/27/2007</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "1" and "2" have both been used to designate the same block "apparatus for controlling movable robot". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

Page 12, Line 16 "paradoxically" should be "periodically"

Page 13, Line 16 "consumed" should be "assumed"

Page 14, first 2 ¶s, refer to the head and arms being controlled by the "movement control portion" which is not in synchronism with Fig. 1 and

Page 36, Line 11 "he dace" should be "the face".

Appropriate correction is required.

Claim Objections

Claim 11 is objected to because of the following informalities: at the end of the first line of page 42, "serves" should be "serve". Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 11 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. A program is not statutory unless it is embodied on a readable medium.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims **1-2 and 5-8** are rejected under 35 U.S.C. 103(a) as being obvious over U.S. Patent No. 6,556,892 to Kuroki et al. (hereafter referred to as Kuroki) in view of Patent Abstracts of Japan JP03-006710 to Yoshinori (hereafter referred to as Yoshinori).

Regarding independent **claim 1**, "An apparatus for controlling a movable robot comprising a camera, moving means, and a device for outputting a sound, which comprises:" – reads on Kuroki Fig 4, where a movable robot, having a picture input

device (251), left and right legs, (331R and 331L) and a speech output device (253) is shown – Fig. 4 is described at col. 6, line 3 to col. 7 line 36.

means for recognizing a subject to be followed up, which recognizes the subject on the basis of an image taken by the camera; - reads on the image recognition unit (117) of Fig. 5, described at Col. 8 lines 49-60.

means for recognizing a distance to from the subject having been recognized by the means for recognizing a subject to be followed up; - Kuroki does not measure the distance to the subject, but Yoshinori measures the distance between the robot (2) and the human being (1). It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Yoshinori's known technique to the image received in Kuroki to use the distance to determine how loudly to speak to the subject.

means for controlling movement, which controls said moving means so as to keep the distance from said movable robot to the subject, having been recognized by said means for recognizing a distance to the subject, at a predetermined distance; - Kuroki does not follow the identified subject but Yoshinori follows the identified subject since it is a follower robot. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Yoshinori's known technique of following to the subject previously identified by Kuroki in order to have Kuroki's robot be more human-like.

means for controlling the outputting of a sound, which outputs a sound or a voice related to the distance to the subject. – Reads on Kuroki's speech synthesis unit Fig. 5 120 as described at col. 9, lines 16-22.

Regarding **claim 2**, which is dependent on claim 1, wherein said moving means of the movable robot moves by two legs' walking. – Reads on Legs (101R and 101L) of Fig. 1 as described in col. 43-53.

Regarding **claim 5**, which is dependent on claim 1, wherein the subject to be followed up is a person, and which further comprises means for judging instruction from a person. – reads on col. 7, lines 47-52 for person recognition and col. 8, lines 52-54 for interpreting hand gestures.

Regarding **claim 6**, which is dependent on claim 5, wherein said means for judging instruction from a person judges whether or not the robot follows up the person based on the results of recognition in which the person is recognized from the face image. – Reads on Kuroki col. 7, lines 47-52 for person recognition.

Regarding **claim 7**, which is dependent on claim 6, wherein said means for judging instruction from a person judges the instruction from the person based on at least one of posture, and gesture of said person. – Reads on Kuroki col. 8, lines 52-54 for interpreting hand gestures.

Regarding **claim 8**, which is dependent on claim 5, wherein said means for judging instruction from a person judges the instruction from the person based on a voice vocalized from said person. – reads on Kuroki col. 8, lines 24-34.

Claims **9** is rejected under 35 U.S.C. 103(a) as being obvious over Kuroki in view of Yoshinori and further in view of UK Patent Application No. GB 2 258 098 to Na (hereafter referred to as Na).

Regarding **claim 9**, which is dependent on claim 1, wherein said means for controlling the outputting of a sound changes a volume of voice outputted to said device for outputting a sound, based on a circumferential noise level. – Neither Kuroki nor Yoshinori mention changing the sound based on the ambient noise. However, Na teaches automatically controlling the volume of sound based on background noise. (Page 1, lines 6-9). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the volume control feature of Na in the moving robot described by the combination of Kuroki and Yoshinori to assure that the robot can be heard.

Claims **10-11** are rejected under 35 U.S.C. 103(a) as being obvious over Kuroki in view of Yoshinori and further in view of Japanese Patent No. JP-2005202078 A to Shimomura (hereafter referred to as Shimomura).

Regarding independent **claim 10**, A process for controlling a movable robot comprising a camera, moving means, and a device for outputting a sound, which

comprises: – reads on Kuroki Fig 4, where a movable robot, having a picture input device (251), left and right legs, (331R and 331L) and a speech output device (253) is controlled – Fig. 4 is described at col. 6, line 3 to col. 7 line 36.

- a step for recognizing a subject to be followed up, which recognizes the subject on the basis of an image taken by the camera; – Reads on col. 7, lines 47-52 for person recognition.
- a step for recognizing a distance to the subject having been recognized by the step for recognizing a subject to be followed up; - Kuroki does not measure the distance to the subject, but Yoshinori measures the distance between the robot (2) and the human being (1). It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Yoshinori's known technique to the image received in Kuroki to use the distance to determine how loudly to speak to the subject.
- a step for controlling movement, which controls said moving means so as to keep the distance to the subject having been recognized by said step for recognizing a distance to the subject at a predetermined distance; and - Kuroki does not follow the identified subject, but Yoshinori follows the identified subject since it is a follower robot. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Yoshinori's known technique of following to the subject previously identified by Kuroki in order to have Kuroki's robot be more human-like.

- a step for controlling the outputting of a sound, which outputs a sound or a voice related to the distance to the subject. - Neither Kuroki nor Yoshinori mention changing the sound based on distance to the subject. However, Shimomura teaches changing the speech form, such as sound volume, speed and intonation based on the distance detected between the robot and the user – see Derwent 2005-53276 Basic Abstract. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the volume control feature of Shimomura in the moving robot described by the combination of Kuroki and Yoshinori to further increase the human-like aspect of the robot.

Regarding independent **claim 11**, A program for controlling a movable robot comprising a camera, moving means, and a device for outputting a sound: which comprises having a computer to serve as – – reads on Kuroki Fig 4, where a movable robot, having a picture input device (251), left and right legs, (331R and 331L) and a speech output device (253) is shown. Fig. 4 is described at col. 6, line 3 to col. 7 line 36. Further, as shown in Fig. 4, the robot comprises at least 2 computers (211, 311)

- means for recognizing a subject to be followed up, which recognizes the subject on the basis of an image taken by the camera; - reads on the image recognition unit (117) of Fig. 5, described at Col. 8 lines 49-60.
- means for recognizing a distance to the subject having been recognized by the means for recognizing a subject to be followed up; Kuroki does not

measure the distance to the subject, but Yoshinori measures the distance between the robot (2) and the human being (1). It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Yoshinori's known technique to the image received in Kuroki to use the distance to determine how loudly to speak to the subject.

- means for controlling movement, which controls said moving means so as to keep the distance to the subject having been recognized by said means for recognizing a distance to the subject at a predetermined distance; and -
Kuroki does not follow the identified subject but Yoshinori follows the identified subject since it is a follower robot. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Yoshinori's known technique of following to the subject previously identified by Kuroki in order to have Kuroki's robot be more human-like.
- means for controlling the outputting of a sound, which outputs a sound or a voice related to the distance to the subject. - Neither Kuroki nor Yoshinori mention changing the sound based on distance to the subject. However, Shimomura teaches changing the speech form, such as sound volume, speed and intonation based on the distance detected between the robot and the user – see Derwent 2005-53276 Basic Abstract. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the volume control feature of Shimomura in the moving robot described by the

combination of Kuroki and Yoshinori to further increase the human-like aspect of the robot.

Claims 3-4 are rejected under 35 U.S.C. 103(a) as being obvious over Kuroki in view of Yoshinori and further in view of U.S. Patent Publication No. 2004/0230340 to Fukuchi et al. (hereafter referred to as Fukuchi).

Regarding **claim 3**, which is dependent on claim 1, which further comprises means for holding map information, which holds map information of an area within which said movable robot moves, and – While both Kuroki and Yoshinori incorporate memory which could hold maps in their robots, maps are not mentioned. However, Fukuchi uses part of the memory to hold map information map of the local environment of the area – Fig. 5 and ¶19. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the map holding mechanism of Fukuchi into the robot described by the combination of Kuroki and Yoshinori to enhance the abstract input data on which it models a behavior.

wherein said means for controlling movement determines the actuation of said moving means based on the map information held in said means for holding map information. – While Kuroki and Yoshinori are silent on maps, Fukuchi enhances its maps, determining landmarks, obstacles and safety zones. Fukuchi then uses these map features to guide movement - ¶19. Once the map was incorporated in the robot of Kuroki and Yoshinori, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the data so contained.

Regarding **claim 4**, which is dependent on claim 3, wherein a restricted area which prohibits approach is set in said map information held in said means for holding map information. Fukuchi describes recognizing mobility regions in its map -¶67 – and conversely does not enter regions that are not mobile areas – such as obstacles, landmarks and safety areas - ¶81. It would have been obvious to one of ordinary skill in the art at the time of the invention to use these features of Fukuchi with the combined robot to better interact with the human environment.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. DE 10066147 assigned to Romy De Salvagno teaches a golf caddy that follows a golfer at a safe distance; U.S. Patent Pub. No. 2004/0024490 to McLurkin teaches two robotic devices that maintain a definable distance between them; and U.S. Patent No. 7,152,050 to Aoyama et al. teaches a biped robot capable of learning behaviors.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lin B. Olsen whose telephone number is 571-272-9754. The examiner can normally be reached on M-F, 7:30am-5:00pm EST, Alternate Fri. off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian T. Pendleton can be reached on 571-272-7527. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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SUPERVISORY PATENT EXAMINER